

THE VARIETIES OF *SOLIDAGO ULIGINOSA*

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Since it is now evident that the type of *Solidago uliginosa* Nutt. (1834) is identifiable with that of *S. neglecta* Torr. & Gray (1842)—see Cronquist in RHODORA, xlix. 72 (1947)—it becomes necessary to find a name for the northern, often calcicolous species which, following Gray in the Synoptical Flora, has been erroneously passing as *S. uliginosa*. This species is *S. humilis* Pursh (1814), photograph of TYPE before me, not *S. humilius* (corrected lapsus for *S. humilis*) Mill. (1768). Apparently its first available name is *S. chrysolepis* Fernald in Ottawa Nat. xix. 168 (1905). The latter, *S. chrysolepis*, is a boreal species of calcareous to mediacid rocky or gravelly soils or marshes¹, occurring from near lat. 60° in northern Labrador to Manitoba, south to Newfoundland, Cape Breton, New Brunswick, northern and western New England, northwestern New Jersey ("Marl bog", Warren County; etc.), northeastern Pennsylvania, central and western New York ("Boggy calcareous meadows"—Wiegand & Eames, Fl. Cayuga L. Basin, 400), mountains of West Virginia (very local: at 2500 ft., east of Gorman, *Svenson*, no. 4449), Ohio, Michigan, Wisconsin and Minnesota. Its fleshy-coriaceous basal leaves are usually entire or merely undulate to crenate (only exceptionally serrate); its inflorescence an elongate thyrses 0.3–4.5 dm. long, with appressed erect cylindric (not secund) branches; heads on pedicels becoming 1–2 cm. long; involucre 4–6 mm. high; disk-florets 9–15.

On the other hand, true *S. uliginosa* (*S. neglecta* Torr. & Gray; *S. uniligulata* (DC.) Porter) is most often an extreme oxylophyte (only one variety definitely calcicolous), occurring in acid bogs and peats as a series of geographic varieties from Delaware and Maryland, very rarely in the upland south to North Carolina,

¹ The following memoranda by the collectors, taken from labels of *Solidago chrysolepis*, are to the point, omitting those from the Straits coast of Newfoundland, Anticosti and Mingan Islands, lower levels of Gaspé, the shores and islands of Lake Mistassini, the foot of James Bay and other exclusively or mostly limestone regions where the species abounds: talus of limestone cliff; rocky limestone barren; sur les tables de calcaire dolomitique des rivages; Arbor-Vitae swamp (usually marly); lime heath; marl bog; and, of course many from "bogs", "sphagnum bogs", etc., for the species tolerates some acidity. Search of field-labels of *S. uliginosa* will reveal few, if any, indicating calcareous soils, and no specimens whatever from the northerly calcareous areas noted above.

northward to central Newfoundland, the Magdalen Islands, southern New Brunswick, central Maine, New Hampshire, Vermont, New York, southeastern Ontario, Ohio (very local), Michigan and Wisconsin. Its thinnish, radical leaves are usually serrate and not fleshy; the inflorescence is a panicle made up of secund branches; the pedicels are very rarely up to 1 cm. long; the involucre is 3–5 mm. high; disk-florets 4–8. For the most part occupying very different areas, the two species meet at the borders of their ranges and there they often cross, just as do most other species of the genus when they commingle: the very distinct *S. caesia* crossing with such wholly different species as *S. flexicaulis*, *bicolor*, *rugosa* and *canadensis*; but the most striking case is *S. asperula* Desf., an almost inevitable hybrid wherever the ubiquitous *S. rugosa* of fresh soils closely approaches *S. semper-virens* of the salt-marshes and seashore. In brief, although the boreal *S. chrysolepis* will cross with the more austral *S. uniligulata*, the two species are, in the main, completely distinct.

Returning to the geographic varieties of *Solidago uliginosa*, I recognize the following:

- a. Relatively stout, 0.6–1.5 m. high; cauline leaves 20–40, the upper ones oblong-lanceolate, the lower ones ovate-lanceolate to -oblong and 3–8 cm. broad; panicle elongate-pyramidal to ellipsoid, 1–4.5 dm. long and 0.3–2.5 dm. thick
..... *S. uliginosa*, var. *uliginosa*.
- a. Slender, 2–9 dm. high; cauline leaves 5–20 (rarely –30), linear to lanceolate, the lower ones narrowly lanceolate to oblanceolate and 0.7–3 cm. broad . . . b.
- b. Panicle elongate-pyramidal to cylindric-ellipsoid, commonly 1-sided, 0.2–2.5 dm. long, 1–10 cm. thick.
Branches of panicle and pedicels conspicuously hirtellous; plants of acid bogs and swamps..... Var. *linoides*.
Branches of panicle and pedicels glabrous or glabrate and glutinous; chiefly of marly bogs and swamps..... Var. *levipes*.
- b. Panicles corymbiform to rhomboid or broadly pyramidal, 2.5–15 cm. broad, usually dense..... Var. *terrae-novae*.

S. ULIGINOSA Nutt., var. *ULIGINOSA* (Nutt.) Cronquist in *RHODORA*, xlix. 73 (1947). *S. uliginosa* Nutt. in Journ. Acad. Nat. Sci. Philad. vii. 101 (1834). *S. neglecta* Torr. & Gray, Fl. N. Am. ii. 213 (1842); Gray, Syn. Fl. N. Am. i². 154 (1884). *S. uniligulata* (DC.) Porter, var. *neglecta* (Torr. & Gray) Fernald in *RHODORA*, xxiii. 292 (1922).—Acid swamps, meadows and moist to dryish thickets, Delaware and Maryland and upland of North Carolina (rare), north to Nova Scotia, southeastern and southern Maine, southern New Hampshire, southern Vermont, New York, Ohio, Lambton County, Ontario, southern Michigan and southern Wisconsin. Late July—early October.

The hybrid of *S. chrysolepis* and *S. uliginosa*, var. *uliginosa* (*S. neglecta*) is

× **S. Farwellii**, nom. nov. *S. neglecta*, var. *simulans* Farwell in Papers Mich. Acad. Sci. i. 100 (1923), not *S. simulans* Fernald in RHODORA, xxxviii. 305, plate 419, figs. 1–5 (1936).

Var. **linoides** (Torr. & Gray), comb. nov. ? *Bigelovia uniligulata* DC. Prodr. v. 329 (1836). *Chrysocoma uniligulata* (DC.) Nutt. in Trans. Am. Phil. Soc. n. s. vii. 325 (1840). *S. linoides* Torr. & Gray, Fl. N. Am. ii. 216 (1842) as to plant described from New Jersey and Massachusetts, not as to Solander specimen cited, Torrey & Gray also citing under *S. linoides* "Solidago uliginosa, partly, Nutt.!". *S. neglecta* Torr. & Gray, var. *linoides* (Torr. & Gray) Gray, Syn. Fl. N. Am. i². 154 (1884), Gray again noting it as "*S. uliginosa*, Nutt. . . . , in part, but not of his own herb. nor descr." *S. neglecta*, var. *uniligulata* (DC.) BSP. Prelim. Cat. N. Y. Pl. 26 (1888). *S. uniligulata* (DC.) Porter in Mem. Torr. Bot. Cl. v. 320 (1894). *S. humilis* Pursh, var. *peracuta* Fernald in RHODORA, xvii. 6 (1915). *S. uliginosa*, var. *peracuta* (Fernald) Friesner in Butl. Univ. Bot. Studies, iii. no. 1: 55 (1933).—Acid bogs and peats, New Jersey and eastern Pennsylvania, north to Exploits and Humber Valleys, Newfoundland, Magdalen Islands, southern New Brunswick, central Maine, New Hampshire, Vermont, New York, southern Ontario and southern Michigan. Type from Wading River, New Jersey, September, 1833, Asa Gray in Gray Herb.

Although Torrey & Gray, Gray (through five editions of the Manual), Porter, House and others, who really knew the two extremes, considered *S. uniligulata* or *S. linoides* a distinct species, altogether too many transitions occur between it and typical *S. uliginosa* in the southern half of their ranges. From Newfoundland to central Maine, where typical *S. uliginosa* is not found, there is no such trouble, but southward the sorting sometimes becomes a bit artificial. The type and only collection of *S. humilis*, var. *peracuta* is a very young specimen but its thin and serrate lower leaves are those of *S. uliginosa*, var. *linoides* (although in the young plant the cauline ones are still overlapping), the inflorescence is too young for definite pronouncement, but its short and very hispid pedicels and branches and the involucre are those of *S. uliginosa*, var. *linoides*.

Var. **levipes** (Fernald), comb. nov. *S. uniligulata*, var. *levipes* Fernald in RHODORA, xvii. 7 (1915). Marly bogs, swamps and shores, New York and southern Ontario.

House, Annot. List N. Y. State, 691 (1924), states that var. *levipes* "seems to include nearly all of the inland specimens of this species." Wiegand & Eames, Fl. Cayuga Lake Basin, 400 (1926) cite *S. uniligulata* (in their area the var. *levipes*) as "usually in marly soil." The plants have the narrow and serrate leaves as in *S. uliginosa*, var. *linoides* but the inflorescence is essentially glabrous as in *S. chrysolepis*. It may, when carefully checked, prove to be a persistent hybrid of the two.

Var. *terrae-novae* (Torr. & Gray), comb. nov. *S. Terrae-Novae* Torr. & Gray, Fl. N. Am. ii. 206 (1842); Gray, Syn. Fl. N. Am. i². 154 (1884). *S. uniligulata*, var. *terrae-novae* (Torr. & Gray) Fernald in RHODORA, xxiii. 292 (1922).—Peaty barrens, tundra, acid rock and damp thickets, southernmost Newfoundland, north to Trinity Bay and Bay St. George; Magdalen Islands; Cape Breton, Nova Scotia, to southern New Hampshire.

Although in its most typical development var. *terrae-novae* is very pronounced, it passes into var. *linoides*; and, although treating it as a distinct species, Asa Gray, in preparing the Synoptical Flora, marked the type of *S. terrae-novae* from *La Pylaie* as a variety of *S. neglecta* and then crossed out the new identification. Many later collections show that his impulse was the right one. The variety has the slender habit and reduction of leaves of var. *linoides*, but a broad panicle suggesting most extreme inflorescences of var. *uliginosa*.

THE GENUS *CREPIS*.—Among large plant genera, *Crepis* is almost unique for the amount of genetic, cytological, and taxonomic study it has received, principally at the hands of Babcock and his associates. One hundred and thirteen of its 196 species have been cultivated and investigated cytologically and 55 of them have been employed in interspecific hybridization. The genus was originally selected as suitable for genetic experiment because of the low chromosome number of some of its species. It was soon discovered that taxonomic revision was necessary before new experimental evidence could be satisfactorily correlated, and Babcock was thus led to become a practising taxonomist. How ably he has played this role will be clear to any reader of the present publication.¹

Since taxonomy is or should be one of the major synthesizing phases of biology, it is fitting that the phylogenetic conclusions from the author's three decades of study of the genus should be expressed in taxonomic form. This is truly a "biosystematic" treatment inasmuch as evidence from hybridization,

¹ BABCOCK, ERNEST BROWN. The Genus *Crepis*. Univ. Calif. Publ. Bot. vol. 21, pp. xii + 1-198, frontispiece, plate 1, figures 1-11, tables 1-12. 1947; vol. 22, pp. x + 199-1030, plates 2-36, figures 12-305, [tables 13-19. 1947. Part I, paper, \$3.50 cloth \$4.00; part II, paper \$10.00, cloth \$12.00; both parts, paper \$13.50, cloth \$15.00.